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SUBJECT: Authorization for Release of Technical Information, Control Number: **AFRL-PR-ED-AB-2002-108**
Angelo Alfano and Karl Christe (ERC), "Singlet Delta Oxygen Production from a Gas-Solid Reaction"

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(Boston, MA, 20 May 2002)

SINGLET DELTA OXYGEN PRODUCTION FROM A GAS-SOLID REACTION

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ABSTRACT

Spontaneous reactions between alkali metal or alkaline earth peroxides and hydrogen (deuterium) halide gases demonstrate the efficient production of singlet delta oxygen in a non-liquid medium. These reactions occur under ambient conditions without the need for any external energy source. The production of singlet delta oxygen was verified by direct emission spectroscopy at 1.27 microns with a calibrated optical multichannel analyzer. These reactions overcome the severe quenching problems encountered in liquid-phase reactions and the dangers/inconvenience associated with the use of basic hydrogen peroxide for the chemical oxygen iodine laser (COIL).

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